

Skills Worksheet

Directed Reading

Section: Nature of Matter

Complete each statement by writing the correct term or phrase in the space provided.

1. A(n) _____ is the smallest unit of matter that cannot be broken down by chemical means.
2. A(n) _____ is a substance made of only one kind of atom.
3. A(n) _____ is a weak chemical attraction between polar molecules.
4. A completely filled outer electron level makes an atom _____.
5. Atoms gain or lose _____ to form ions.
6. Water is an example of a(n) _____ compound.
7. Polar molecules have a(n) _____ distribution of electrical charges.

In the space provided, explain how the terms in each pair differ in meaning.

8. molecule, atom

9. compound, element

Skills Worksheet

Directed Reading

Section: Water and Solutions

Complete each statement by writing the correct term or phrase in the space provided.

1. One substance that heats more slowly than many other substances is _____.
2. When humans sweat, water releases heat through _____.
3. An attraction between substances of the same kind is called _____, while an attraction between different substances is called _____.

Read each question, and write your answer in the space provided.

4. Why do ionic compounds dissolve in water?

5. What is a solution?

6. Distinguish between acids and bases.

Skills Worksheet

Directed Reading

Section: Chemistry of Cells

Complete each statement by writing the correct term or phrase in the space provided.

1. The carbon atoms in organic molecules are bonded to other atoms by _____ bonds.
2. The four major classes of organic compounds are _____ , _____ , _____ , and nucleic acids.
3. The building blocks of carbohydrates are _____ .
4. If a carbohydrate molecule contained six carbon atoms, it would also contain _____ hydrogen atoms.
5. Humans cannot digest the carbohydrate _____ .
6. Fats are lipids that store _____ .

Complete each statement by underlining the correct term or phrase in the brackets.

7. Lipids will dissolve in [water / oil].
8. Fats are composed of three fatty acid molecules joined to a molecule of [glycerol / protein].
9. At room temperature, [saturated / unsaturated] fats are usually liquids.
10. A protein is a chain of linked smaller molecules called [amino acids / lipids].

Read each question, and write your answer in the space provided.

11. What two factors determine the shape of a protein?

12. What roles do proteins play in organisms?

Directed Reading *continued*

In the space provided, write the letter of the description that best matches the term or phrase.

- | | |
|------------------------|--|
| _____ 13. nucleic acid | a. temporarily stores energy |
| _____ 14. nucleotide | b. involved in the production of proteins |
| _____ 15. DNA | c. subunit of DNA and RNA |
| _____ 16. RNA | d. one of the major classes of organic compounds |
| _____ 17. ATP | e. stores hereditary information |

Skills Worksheet

Directed Reading

Section: Energy and Chemical Reactions

Read each question, and write your answer in the space provided.

1. Why is energy important to living things?

2. How does the energy in food become available to organisms?

In the space provided, write the letter of the description that best matches the term or phrase.

- | | |
|-------------------------------------|---|
| _____ 3. energy | a. ending materials in a chemical reaction |
| _____ 4. reversible reaction | b. energy needed to start a chemical reaction |
| _____ 5. products | c. chemical bonds between atoms are broken and new ones are formed |
| _____ 6. chemical reaction | d. can proceed in the opposite direction |
| _____ 7. activation energy | e. the ability to move or change matter |
| _____ 8. reactants | f. beginning materials in a chemical reaction |

In the space provided, explain how the terms in each pair differ in meaning.

9. energy-releasing reaction, energy-absorbing reaction

10. reactants, products

Directed Reading *continued*

Read each question, and write your answer in the space provided.

11. What is a catalyst?

12. What is an enzyme?

Complete each statement by writing the correct term or phrase in the space provided.

13. A substance on which an enzyme acts is called a(n)

14. Hydrogen _____ is a substrate of the enzyme catalase.

15. A(n) _____ is the part of the enzyme into which the substrate fits.

Answer Key

Directed Reading

SECTION: NATURE OF MATTER

1. atom
2. element
3. hydrogen bond
4. stable
5. electrons
6. polar
7. unequal
8. A molecule is a group of two or more atoms that are held together by covalent bonds. An atom is the smallest unit of matter that cannot be broken down by chemical means.
9. A compound is a substance made by joining atoms of two or more elements. An element is a substance that is made up of only one kind of atom.

SECTION: WATER AND SOLUTIONS

1. water
2. evaporation
3. cohesion, adhesion
4. The ions in an ionic compound are attracted to the ends of water molecules that have a charge opposite to that of the ion. These attractions pull apart the ions and cause the ions to dissolve in the water.
5. a mixture in which one or more substances are evenly distributed in another substance
6. Acids are compounds that form hydrogen ions when dissolved in water and increase the number of hydrogen ions in a solution. Bases are compounds that usually form hydroxide ions when dissolved in water and decrease the number of hydrogen ions in a solution.

SECTION: CHEMISTRY OF CELLS

1. covalent
2. carbohydrates, lipids, proteins
3. monosaccharides
4. twelve
5. cellulose
6. energy
7. oil
8. glycerol

9. unsaturated
10. amino acids
11. the sequence of amino acids and how the amino acids interact with one another and with water
12. Some proteins help chemical reactions, and others have important structural uses.
13. d
14. c
15. e
16. b
17. a

SECTION: ENERGY AND CHEMICAL REACTIONS

1. Energy powers the chemical reactions in cells.
2. through chemical reactions
3. e
4. d
5. a
6. c
7. b
8. f
9. The reactants of an energy-releasing reaction contain more energy than the products. The reactants of an energy-absorbing reaction contain less energy than the products.
10. Reactants are the starting materials for a chemical reaction. Products are the ending materials of a chemical reaction.
11. Catalysts are substances that reduce the activation energy needed for chemical reactions.
12. Enzymes are substances that increase the speed of chemical reactions.
13. substrate
14. peroxide
15. active site

Active Reading

SECTION: NATURE OF MATTER

1. molecule
2. Covalent bonds form when two or more atoms share electrons.